

CLAIMS

1. A method for communication for a supervisory control and data acquisition (SCADA) system, the SCADA system comprising:
 - (a) an enterprise server;
 - 5 (b) at least one intelligent electronic device (RTU), wherein the RTU measures a physical process and stores digital data representative of the measurement in a memory area for transmission; and said RTU has software that includes a generic encapsulation layer (GEL) and automation software;
 - (c) a communication software (AES) linking the enterprise server with the at least one RTU.
- 10 2. The method comprising the steps of:
 - (a) communicating a command from the enterprise server to said RTU via the AES to configure said RTU;
 - (b) permitting said RTU to receive data input and to store said data; and
 - 15 (c) transmitting said data back from the RTU to the AES and the enterprise server.
3. The method of claim 1, wherein the configuration functionality is communicated to said RTU without the use of primary signal injection equipment using the AES
4. The method of claim 1, wherein said RTU comprises:

- (a) an analog-to-digital converter (ADC) for measuring the physical process and converting the measurements into a digital representations of the measured values;
- (b) a memory area for storing digital representations of the measured value;
- 5 (c) at least one processor in communication with said ADC and said memory area, said processor operating upon said digital representation of the measured values according to a predetermined function, and said processor selectively moving said digital representation of the measured values to said memory area;
- 10 (d) a command register for storing communication commands, said command register being in communication with said processor such that said processor moves said digital representaton of the measured values to said memory area when the command register contains an enabling communication command;
- 15 (e) at least one bidirectional port in communication with the AES and enterprise server for transmitting said digital representation of the measured values to the enterprise server from the RTU via the AES; and
- (f) wherein said bidirectional port receives digital represntation of the measured values from the AES such that said processor reconfigures the RTU.

5. The method of claim 1, wherein said RTU comprises:

- (a) an analog-to-digital converter (ADC) for measuring the physical process and converting the measurements into a digital representations of the measured values;
- (b) a memory area for storing digital representations of the measured value;
- 5 (c) at least one processor in communication with said ADC and said memory area, said processor operating upon said digital representation of the measured values according to a predetermined function, and said processor selectively moving said digital representation of the measured values to said memory area;
- (d) a command register for storing communication commands, said command register being in communication with said processor such that said processor moves said digital representation of the measured values to said memory area when the command register contains an enabling communication command;
- (e) an input port in communication with the AES and enterprise server for transmitting said digital representation of the measured values from the enterprise server to the RTU via the AES and wherein said processor reconfigures the RTU.;
- 15 (f) an output port in communication with the AES and enterpriese server for transmitting digital representation of the measured values from the RTU via the AES to the enterprise server .

6. The method of claim 4, wherein said automation software of said RTU can perform at least one of the activities: meter utilities, detect abnormal operating conditions, perform data processing, control operating conditions and combinations thereof.

7. The method of claim 5, wherein said automation software of said RTU can perform at least one of the activities: meter utilities, detect abnormal operating conditions, perform data processing and control operating conditions.

8. The method of 1, wherein said RTU continues to operate said automation software while receiving communication commands and executing reconfiguration commands.

9. The method of claim 1, wherein said AES continues communicating with connected RTUs while an additional enterprise server is added to the SCADA system.

10. The method of claim 1, wherein said AES continues communicating with connected RTUs while an additional enterprise server is removed from the SCADA system.

11. The method of claim 1, wherein said AES continues communicating with connected RTUs while an additional RTU is added to the system.

12. The method of claim 1, wherein said AES continues communicating with connected RTU's when an RTU is deleted from the system.

13. The method of claim 4, wherein said bidirectional port is in electrical communication with the AES.

14. The method of claim 4, wherein said bidirectional port is in wireless communication with the AES.

15. The method of claim 5, wherein said input port, output port, or combination thereof is in electrical communication with the AES.
16. The method of claim 5, wherein said input port, output port, or combination thereof is in wireless communication with the AES.
- 5 17. The method of claim 1, wherein said RTU is configured with configuration software (ARME).
18. The method of claim 1, wherein said AES utilizes separate configuration software.